

Richard S. Camuccio

CONTACT	Center for Gravitational Wave Astronomy University of Texas Rio Grande Valley One West University Boulevard Brownsville, Texas 78520, USA	Email: richard.camuccio01@utrgv.edu Web: www.rcamuccio.com ORCID: 0000-0002-2510-3626
EDUCATION	University of Texas Rio Grande Valley , Brownsville, TX Ph.D., Physics, Jan 2022 – present Advisor: Mario C. Díaz Thesis: M.S., Physics, Aug 2016 – May 2020 Advisor: Mario C. Díaz Thesis: <i>Searching for Optical Counterparts to Gravitational Waves</i> Franklin & Marshall College , Lancaster, PA B.A., Astrophysics, Aug 2012 – May 2016 Advisor: Amy L. Lytle Thesis: <i>Controlling Second Harmonic Generation Using Counterpropagating Light</i>	
RESEARCH EXPERIENCE	Assistant Director Dr. Cristina V. Torres Memorial Astronomical Observatory Time Domain Astronomy Group Center for Gravitational Wave Astronomy University of Texas Rio Grande Valley	Jun 2023 – present
	Graduate Research Assistant Transient Optical Robotic Observatory of the South Collaboration Center for Gravitational Wave Astronomy University of Texas Rio Grande Valley	Jan 2022 – present
	Graduate Research Assistant Time Domain Astronomy Group Center for Gravitational Wave Astronomy University of Texas Rio Grande Valley	Nov 2016 – Jul 2020
	Assistant Director Dr. Cristina V. Torres Memorial Astronomical Observatory Time Domain Astronomy Group Center for Gravitational Wave Astronomy University of Texas Rio Grande Valley	Nov 2016 – Jul 2020
	Team Leader Arecibo Remote Command Center Center for Advanced Radio Astronomy University of Texas Rio Grande Valley	2016 – 2017
	Undergraduate Research Assistant Lytle/Gagnon Research Group Department of Physics and Astronomy Franklin & Marshall College	2015 – 2016

Team Leader

2015 – 2016

Arecibo Remote Command Center
Department of Physics and Astronomy
Franklin & Marshall College

Visiting Observer

Mar 2013, May 2015

National Undergraduate Research Observatory
Department of Physics and Astronomy
Northern Arizona University

F&M Summer Scholar

May – July 2013

Arecibo Remote Command Center
Department of Physics and Astronomy
Franklin & Marshall College

Observatory Assistant

Jan 2013 – May 2016

Joseph R. Grundy Observatory
Department of Physics and Astronomy
Franklin & Marshall College

REFEREED
PUBLICATIONS

K. Wardega, A. Zdrozny, M. Beroiz, R. Camuccio, and M. C. Díaz. *Detecting Optical Transients Using Artificial Neural Networks and Reference Images from Different Surveys*, Monthly Notices of the Royal Astronomical Society, Volume 507, Issue 2 (2021)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

Md. F. Alam et al. *The NANOGrav 12.5-year Data Set: Wideband Timing of 47 Millisecond Pulsars*, The Astrophysical Journal Supplement Series, Volume 252, Issue 1, ID 5 (2021)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

Md. F. Alam et al. *The NANOGrav 12.5-year Data Set: Observations and Narrowband Timing of 47 Millisecond Pulsars*, The Astrophysical Journal Supplement Series, Volume 252, Issue 1, ID 4 (2021)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

R. Artola et al. *TOROS Optical Follow-Up of the Advanced LIGO-Virgo O2 Second Observational Campaign*, Monthly Notices of the Royal Astronomical Society, Volume 493, Issue 2 (2020)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

E. Parent et al. *The Implementation of a Fast-Folding Pipeline for Long-Period Pulsar Searching in the PALFA Survey*, The Astrophysical Journal, Volume 861, Issue 1, ID 44 (2018)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

K. Stovall et al. *PALFA Discovery of a Highly Relativistic Double Neutron Star Binary*, The Astrophysical Journal Letters, Volume 854, Issue 2, ID L22 (2018)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

M. C. Díaz et al. *Observations of the First Electromagnetic Counterpart to a Gravitational Wave Source by the TOROS Collaboration*, The Astrophysical Journal Letters, Volume 848, Issue 2, ID L29 (2017)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#) [\[VizieR\]](#)

B. P. Abbott et al. *Multi-messenger Observations of a Binary Neutron Star Merger*, Astrophysical Journal Letters, Volume 848, Issue 2, ID L12 (2017)

[\[ADS\]](#) [\[arXiv\]](#) [\[DOI\]](#) [\[SIMBAD\]](#)

A. L. Lytle, R. Camuccio, R. Myer, A. Penfield, and E. Gagnon, *Influence of Counterpropagating Light on Phase Matching in Second Harmonic Generation*, Journal of the Optical Society of America B, Volume 33, Issue 7 (2016)

[ADS] [DOI]

B. Christy, R. Anella, A. Lommen, L. S. Finn, R. Camuccio, and E. Handzo, *Optimization of NANOGrav's Time Allocation for Maximum Sensitivity to Single Sources*, The Astrophysical Journal, Volume 794, Issue 2, ID 163 (2014)

[ADS] [arXiv] [DOI] [SIMBAD]

UNREFEREED
PUBLICATIONS

M. Díaz, L. Macri, J. L. Nilo Castellon, B. Sanchez, C. Mendes, C. Colazo, M. Schneitter, C. Girardini, D. Garcias Lambas, M. Beroiz, A. Zadrozny, R. Camuccio, M. Castillo, and J. Garcia, *LIGO/Virgo G298048: TOROS photometry of SSS17a*, Gamma-ray Coordinates Network Circular, 21895, September 2017

[ADS] [DOI]

M. Díaz, D. Garcias Lambas, L. Macri, J. L. Nilo Castellon, O. Lopez-Cruz, R. Camuccio, M. Valencia, V. Perez, and W. Rattray, *LIGO/Virgo S200224ca: No counterpart candidates in TOROS observations*, Gamma-ray Coordinates Network Circular, 27293, March 2020

[ADS] [DOI]

M. Díaz, D. Garcias Lambas, L. Macri, J. L. Nilo Castellon, O. Lopez-Cruz, R. Camuccio, E. Caputa, and W. Mendoza, *LIGO/Virgo S190814bv: No counterpart candidates in TOROS observations*, Gamma-ray Coordinates Network Circular, 25349, August 2019

[ADS] [DOI]

SOFTWARE &
ALGORITHMS

Hades — a collection of Python functions used for astronomical data analysis. Pipelines for data reduction, time series photometry, and difference image analysis.

<https://github.com/rcamuccio/Hades>

CCD Analysis Pipeline (CAP) — a Python script for measuring the properties of a CCD camera. Measures linearity, gain, and readout noise from a series of astronomical FITS files.

<https://github.com/rcamuccio/CAP>

Zeus Weather System (ZWS) — a collection of Python functions used for the weather system of the Cristina Torres Memorial Observatory. Reports current conditions, forecasts, solar conditions, and astrophysical events.

<https://github.com/rcamuccio/Zeus>

CONFERENCES &
PROCEEDINGS

R. Camuccio, M. Castillo, M. C. Díaz, D. Garcia Lambas, L. Macri, R. Oelkers, A. Reyes, H. Rodriguez, M. Schneiter, *The Transient Optical Robotic Observatory of the South*, Exploring Extreme Matter and Spacetimes with Gravitational Waves, Nicholas and Lee Begovich Center for Gravitational-Wave Physics and Astronomy, Fullerton, CA, September 2022

R. Camuccio, M. Castillo, M. C. Díaz, D. Garcia Lambas, L. Macri, R. Oelkers, A. Reyes, H. Rodriguez, M. Schneiter, *The TOROS Project: A Status Report*, Abstract ID S17.00064, April Meeting of the American Physical Society, New York, NY, April 2022

[DOI]

M. Beroiz, R. Camuccio, L. Capistran, M. Castillo, V. De Los Santos, M. C. Díaz, A. Hinojosa Lee, M. Jette, A. Martinez, B. Martinez, W. Mendoza, V. Perez, W. Rattray, A. Reyes, E. Sanchez, M. Valencia, K. Webb, *Astronomy at the Service of an American Hispanic Community*, Communicating Astronomy with the Public (CAP) Virtual Conference, International Astronomical Union, May 2021

[\[DOI\]](#)

M. Beroiz, R. Camuccio, M. Castillo, M. Díaz, M. Dominguez, M. Lares, B. Sanchez, A. Zadrożny, *Gravitational-Wave Optical Counterpart Detection Methods for the TOROS Campaign During LVC O2 Observation Run*, Abstract ID Q16.007, April Meeting of the American Physical Society, Denver, CO, April 2019

[\[ADS\]](#)

M. Beroiz, M. Díaz, A. Zadrożny, B. Sanchez, R. Camuccio, M. Castillo, A. Fonrouge, *TOROS Optical Follow-Up During the LVC O2 Observational Campaign*, Joint Space-Science Institute Gravitational Wave Physics and Astronomy Workshop, College Park, MD, December 2018

A. Zadrożny, R. Camuccio, M. Díaz, M. Beroiz, *Telescopes and Optical Data Analysis for O3 and Beyond*, Joint Space-Science Institute Gravitational Wave Physics and Astronomy Workshop, College Park, MD, December 2018

M. Díaz et al. *The Center of Gravitational Wave Astronomy and the Era of Multimessenger Astronomy*, Gravitational Waves Summer School, École de Physique des Houches, Les Houches, France, July 2018

L. Macri, M. C. Díaz, D. G. Lambas, and the TOROS Collaboration, *Observations of the First Electromagnetic Counterpart to a Gravitational Wave Source by the TOROS Collaboration*, IAUS 338: Gravitational Wave Astrophysics: Early Results from GW Searches and Electromagnetic Counterparts, Baton Rouge, LA, October 2017

[\[DOI\]](#)

R. Camuccio, M. Castillo, J. Garcia, P. Lara, M. C. Díaz, and M. Beroiz, *TOROS Follow-Up Observations During O2 LIGO Observational Run*, The Amazing Life of Stars, Cefalù, Italy, September 2017

R. Camuccio, R. Myer, A. Penfield, E. Gagnon, and A. L. Lytle, *All-Optical Quasi-Phase Matching of Frequency Doubling Using Counterpropagating Light*, Abstract ID G1.127, March Meeting of the American Physical Society, Baltimore, MD, March 2016

[\[ADS\]](#)

A. L. Lytle, E. Gagnon, and R. Camuccio, *Controlling Second Harmonic Generation with Counterpropagating Light*, OSA Frontiers in Optics/DLS Laser Science, Paper JW2A.42, San Jose, CA, October 2015

[\[DOI\]](#)

F. Crawford et al. *The Arecibo Remote Command Center at Franklin and Marshall College*, Astronomical Society Meeting, 225, 346.03, January 2015

[\[ADS\]](#)

TEACHING &
MENTORSHIP

Graduate Mentor	2023
B. Schumont, <i>Optical Follow-up of Gravitational Wave Triggers</i> Research Experience for Undergraduates University of Texas Rio Grande Valley	
Graduate Teaching Assistant	2021
Physics of Sound and Music Department of Physics and Astronomy, Texas Tech University	
Graduate Teaching Assistant	2020

	Stellar Astronomy Department of Physics and Astronomy, Texas Tech University	
	Graduate Mentor E. Caputa, <i>Exoplanet Transit Detection and Analysis</i> Research Experience for Undergraduates University of Texas Rio Grande Valley	2019
	Graduate Mentor S. Colom, <i>Characterization of Exoplanets from Transit Light Curves</i> Research Experience for Undergraduates University of Texas Rio Grande Valley	2018
	Graduate Mentor L. Duran, <i>Photometric Studies of the Asteroid 511 Davida</i> B. Gomez, <i>Detection of a Trans-Neptunian Object: Haumea</i> Research Experience for Undergraduates University of Texas Rio Grande Valley	2017
	Graduate Teaching Assistant Introduction to Astronomy II Department of Physics and Astronomy, University of Texas Rio Grande Valley	2016
	Head Tutor Physics and Astronomy Quantitative and Science Center, Franklin & Marshall College	2016
	Tutor Introduction to Physics I Quantitative and Science Center, Franklin & Marshall College	2015
	Lab Teaching Assistant Introduction to Physics II Department of Physics and Astronomy, Franklin & Marshall College	2015 – 2016
	Class Preceptor First-Year Seminar <i>Quarks to Quasars</i> Department of Physics and Astronomy, Franklin & Marshall College	2015
	Student Instructor Intermediate and Advanced Physics J. P. McCaskey High School Mid-Atlantic Relativistic Initiative in Education, Franklin & Marshall College	2013
LECTURES & OUTREACH	<i>A Search for Compact Companions and Optical Transients Using TOROS</i> Physics & Astronomy Department Colloquium University of Texas Rio Grande Valley, Brownsville, TX	2 Feb 2024
	<i>Ring of Fire: The Annular Eclipse of 2023</i> Annular Solar Eclipse Southmost Public Library	14 Oct 2023
	<i>Guest Speakers Panel Q&A</i> NASA Downlink Brownsville to International Space Station	6 Sep 2023

James Pace Early College High School, Brownsville, TX	
<i>Night Sky Tour and Astrophysics Discussion</i> Evening with the Stars McAllen Main Library, McAllen, TX	2 Apr 2023
<i>The Recently Active Sun</i> STARS Astronomy at the Park Cristina Torres Memorial Observatory, Brownsville, TX	24 Mar 2023
<i>Exploring the Cosmos: Space Weather and Night Sky Updates</i> STARS Cosmic Conversations Búho, Brownsville, TX	14 Mar 2023
<i>The BOAT (Brightest of All Time), GRB 221009A</i> STARS Astronomy at the Park Cristina Torres Memorial Observatory, Brownsville, TX	21 Oct 2022
<i>How to Find an Exoplanet: Observing the Waterworld Gliese 1214 b</i> ASTRONight Texas Tech University, Lubbock, TX	21 May 2021
<i>March Equinox 2021</i> STARS Vernal Equinox 2021 Virtual	20 Mar 2021
<i>Observer Narration</i> SPS Zone 13 Virtual Astronomy Night Virtual	5 Feb 2021
<i>The Winter Solstice Sky and Great Conjunction of 2020</i> ASTRONight Texas Tech University, Lubbock, TX	21 Dec 2020
<i>The Late October 2020 Sky</i> ASTRONight Texas Tech University, Lubbock, TX	23 Oct 2020
<i>An Astronomical Journey (of the Night Sky)</i> STARS Gateway to the Cosmos Virtual	26 Sep 2020
<i>Brownsville 2030: Space City</i> Crossroads Festival Science Forum Brownsville, TX	26 Feb 2020
<i>The Black Hole Mass Gap</i> Time Domain Astronomy Group Astrophysics Seminar University of Texas Rio Grande Valley, Brownsville, TX	21 Feb 2020
<i>The Expanded Universe Chronology</i> STARS on Tap 2: The Physics of Star Wars Las Ramblas at Market Square, Brownsville, TX	4 Feb 2020

	<i>Solutions to the Fermi Paradox and Quantifying Extraterrestrial Civilizations</i> STARS on Tap Las Ramblas at Market Square, Brownsville, TX	5 Nov 2019
	<i>Stargazing and Telescope Observations</i> South Texas Astronomical Society Laguna Atascosa National Wildlife Refuge, Los Fresnos, TX	31 Aug 2019
	<i>Astronomy Night</i> South Texas Astronomical Society Liberty Memorial Middle School, Los Fresnos, TX	3 May 2019
	<i>Big Bang Theory</i> 11th and 12th Grade Astronomy Los Fresnos High School, Los Fresnos, TX	6 Feb 2019
	<i>Introduction to Cosmology</i> 11th and 12th Grade Astronomy Los Fresnos High School, Los Fresnos, TX	30 Jan 2019
	<i>Astrophysics at UTRGV</i> Building Astronomy in Texas Symposium University of Texas at Dallas, Richardson, TX	26 Jan 2019
	<i>Super Blood Wolf Moon Viewing</i> South Texas Astronomical Society Mittie A. Pullam Elementary School, Brownsville, TX	20 Jan 2019
	<i>Modern Astronomical Imaging</i> Time Domain Astronomy Group Teacher Workshop Cristina Torres Memorial Observatory, Brownsville, TX	25 Jun 2018
	<i>Nuclear Physics</i> Time Domain Astronomy Group Astrophysics Seminar University of Texas Rio Grande Valley, Brownsville, TX	31 Jan 2018
	<i>Introduction to CGWA and the Era of Multi-Messenger Astronomy</i> Brownsville Leadership Class XXXIII University of Texas Rio Grande Valley, Brownsville, TX	16 Nov 2017
	<i>Grundy 2.0: The Past and Future of F&M's Observatory</i> 35th Annual Central Pennsylvania Consortium Astronomer's Meeting Dickinson College, Carlisle, PA	25 Apr 2015
	<i>Astronomy at F&M: Science Projects at Franklin & Marshall College</i> Astronomy Enthusiasts of Lancaster Country General Meeting Lititz Public Library, Lititz, PA	4 Feb 2015
SCHOOLS & WORKSHOPS	N3AS Summer School on Multi-Messenger Astrophysics Network for Neutrinos, Nuclear Astrophysics, and Symmetries University of California, Santa Cruz Santa Cruz, CA	2022
	Quarks to Cosmos with AI	2021

NSF AI Planning Institute for Data-Driven Discovery in Physics
Carnegie Mellon University
Virtual

Gravitational Waves Summer School 2018
École de Physique des Houches
Les Houches, France

Open Science Grid User School 2017
University of Wisconsin-Madison
Madison, WI

Team Leader Workshop 2017
Arecibo Remote Command Center, Franklin & Marshall College
Lancaster, PA

Team Leader Workshop 2016
Arecibo Remote Command Center, University of Texas Rio Grande Valley
Brownsville, TX

NANOGrav Collaboration Meeting 2013
National Radio Astronomy Observatory
Green Bank, WV

LEADERSHIP &
SERVICE

Founder and Editor-in-Chief 2022 – present
FarFarOut! Science Newsletter
Brownsville, TX

Chief Scientist 2021 – present
South Texas Astronomical Society
Brownsville, TX

Co-Founder and Board Member 2019 – present
South Texas Astronomical Society
Brownsville, TX

Co-Chair Oct 2019
9th Annual Texas Astronomy Undergraduate Research Symposium
University of Texas Rio Grande Valley, Brownsville, TX

LIGO Exhibitor Feb 2018
American Association for the Advancement of Science Annual Meeting
Austin, TX

Member 2015 – 2016
Astronomy Enthusiasts of Lancaster County (AELC)
Lititz, PA

Founder and President 2015 – 2016
F&M Builders
STEM Club and Student Maker Space
Franklin & Marshall College, Lancaster, PA

Chancellor 2014 – 2015

	Bonchek College House Franklin & Marshall College, Lancaster, PA	
	President Physics and Astronomy Club Franklin & Marshall College, Lancaster, PA	2013 – 2014
	President Souderton Class of 2012 Indian Crest Junior High School, Telford, PA	2008 – 2009
EMPLOYMENT	Graduate Assistant TTU Skyview Observatory Texas Tech University, Lubbock, TX	2021
	Hot Foods Associate ShopRite Supermarkets, Hatfield, PA	2016
	Physics Lab Technician Department of Physics and Astronomy Franklin & Marshall College, Lancaster, PA	2014 – 2016
	Sales Associate Ashley Furniture Homestores, Quakertown, PA	2013 – 2016
	Resident Assistant Bonchek College House Franklin & Marshall College, Lancaster, PA	2013 – 2014
	Librarian Assistant Indian Valley Public Library, Telford, PA	2009 – 2012
RESEARCH FOCUS	Observational astronomy, telescope and CCD optics, radio observations Optical transients and GW counterparts Relative and differential photometry	
TECHNICAL SKILLS	Bash, C, CSS, Git, HTCondor, HTML, Java, Javascript, LabVIEW, L ^A T _E X, Mathematica, MATLAB, Python IRAF, SAOImage DS9, AstroImageJ, MaxIM DL, CCDSoft, INDI/Ekos/KStars	
GRANTS	Leser Grant C. Williamson and R. Camuccio, <i>Grant Proposal for Grundy Digital Camera</i> Committee on Grants, Franklin & Marshall College	2016
HONORS	Joseph R. Holzinger Award Department of Physics and Astronomy, Franklin & Marshall College	2016
LANGUAGE	English (native) German (limited working proficiency)	

Italian (elementary proficiency)